

WHAT IS CLAIMED IS:

- 1 1. A surveillance system for an aircraft, comprising:
2 a first antenna comprising a four radiating element antenna
3 configured for electrical coupling to:
4 a first air traffic control transponder;
5 a first traffic alert and collision avoidance system;
6 a second antenna comprising a single radiating element antenna
7 configured for electrical coupling to a second air traffic control transponder;
8 a first mounting interface configured for coupling the first antenna to
9 the aircraft;
10 a second mounting interface configured for coupling the second
11 antenna to the aircraft;
12 wherein the mounting interface of the first antenna has a size and a
13 shape corresponding to a size and shape of the mounting interface of the second
14 antenna.
- 1 2. The surveillance system of Claim 1 wherein the first mounting
2 interface is a first base plate and the second mounting interface is a second base
3 plate.
- 1 3. The surveillance system of Claim 1 wherein the second antenna
2 further comprises a plurality of non-functional elements configured for electrical
3 coupling to a load.

1 4. The surveillance system of Claim 1 wherein the first antenna and
2 the second antenna each are an L-band antenna.

1 5. The surveillance system of Claim 2 wherein the base plate of the
2 first antenna has a generally rectangular shape.

1 6. The surveillance system of Claim 5 wherein the second antenna is
2 configured to send a signal representative of at least one of the position and the
3 altitude of the aircraft.

1 7. The surveillance system of Claim 6 wherein the base plate of the
2 second antenna has a length of at least about 11 inches.

1 8. The surveillance system of Claim 7 wherein the base plate of the
2 second antenna has a width of at least about 6 inches.

1 9. The surveillance system of Claim 8 wherein the second antenna
2 comprises an upper antenna and a lower antenna.

1 10. A surveillance system for an aircraft comprising:
2 a first cabinet, comprising:
3 a first air traffic control transponder;
4 a first traffic alert and collision avoidance system;
5 a first terrain awareness and warning system;
6 a first weather detection and avoidance radar system;
7 wherein the first air traffic control transponder and the first
8 traffic alert and collision avoidance system are configured for electrical
9 coupling to a four radiating element antenna;
10 a second cabinet configured for housing:
11 a second air traffic control transponder;
12 a second traffic alert and collision avoidance system;
13 a second terrain awareness and warning system;
14 a second weather detection and avoidance radar system;
15 wherein the second cabinet includes at least the second air traffic
16 control transponder and is configured for electrical coupling to a single radiating
17 element antenna.

1 11. The surveillance system of Claim 10 wherein a mounting interface
2 of the four radiating element antenna has a shape corresponding a mounting
3 interface of the single radiating element antenna.

1 12. The surveillance system of Claim 11 wherein the mounting
2 interface of the four radiating element antenna comprises a first base plate and
3 the mounting interface of the single radiating element antenna comprises a
4 second base plate.

1 13. The surveillance system of Claim 12 wherein the first cabinet and
2 the second cabinet each comprise a configurable integrated surveillance system.

1 14. The surveillance system of Claim 13 further comprising the four
2 radiating element antenna electrically coupled to the first cabinet.

1 15. The surveillance system of Claim 14 further comprising the single
2 element radiating antenna electrically coupled to the second cabinet.

1 16. The surveillance system of Claim 15 wherein the four radiating
2 element antenna is an L-band antenna and comprises four functional connectors
3 and the single radiating element antenna is an L-band antenna and comprises a
4 single functional connector.

1 17. A method of assembling an aircraft, comprising:
2 providing an airframe of the aircraft;
3 providing a surveillance system inside the airframe and configured
4 for housing in a first cabinet:
5 a first air traffic control transponder;
6 a first traffic alert and collision avoidance system;
7 a first terrain awareness and warning system;
8 a first weather detection and avoidance radar system;
9 providing a second surveillance system inside the airframe and
10 configured for housing in a second cabinet:
11 a second air traffic control transponder;
12 a second traffic alert and collision avoidance system;
13 a second terrain awareness and warning system;
14 a second weather detection and avoidance radar system;
15 providing a first aperture and a second aperture in the airframe;
16 installing a first base plate of a first antenna comprising a four
17 radiating element antenna outside the airframe to cover the first aperture;
18 installing a second base plate of a second antenna comprising a
19 single radiating element antenna outside the airframe to cover the second
20 aperture;
21 wherein the first base plate has a size corresponding to a size of
22 the second base plate.

1 18. The surveillance system of Claim 17 wherein installing the first
2 base plate further comprises installing the first base plate having a shape
3 corresponding to a shape of the second base plate.

1 19. The surveillance system of Claim 18 wherein providing the first
2 aperture and the second aperture further comprises providing the first aperture
3 having a size corresponding to a size of the second aperture.

1 20. The surveillance system of Claim 19 wherein providing the first
2 aperture and the second aperture further comprises providing the first aperture
3 having a shape corresponding to a shape of the second aperture.

1 21. The surveillance system of Claim 20 further comprising:
2 providing in the first cabinet:
3 the first air traffic control transponder;
4 the first traffic alert and collision avoidance system;
5 the first terrain awareness and warning system;
6 the first weather detection and avoidance radar system;
7 providing in the second cabinet: the second air traffic control
8 transponder.

1 22. The surveillance system of Claim 21 further comprising electrically
2 coupling the first storage unit to the first antenna and electrically coupling the
3 second storage unit to the second antenna.

1 23. A surveillance system for an aircraft, comprising:
2 an antenna comprising:
3 a functional connector configured for electrical coupling to a
4 functional load comprising an air traffic control transponder and a
5 functional radiating element;
6 a plurality of non-functional connectors each configured for
7 coupling to a non-functional load;
8 a base plate configured for coupling the antenna to the aircraft.

1 24. The surveillance system of Claim 23 further comprising a plurality
2 of cables for connecting the functional connector of the antenna to the functional
3 load and the plurality of non-functional connectors to the non-functional load.

1 25. The surveillance system of Claim 24 wherein the non-functional
2 load comprises a dummy load.

1 26. The surveillance system of Claim 24 further comprising a second
2 antenna comprising four functional connectors configured for coupling to at least
3 one of an air traffic control transponder and a traffic alert and collision avoidance
4 system and having a base plate configured for coupling the second antenna to
5 the aircraft.

1 27. The surveillance system of Claim 26 wherein the base plate of the
2 first antenna has a size and a shape corresponding to a size and shape of the
3 base plate of the second antenna.

1 28. The surveillance system of Claim 27 wherein the first antenna and
2 the second antenna are L-band antennas.

1 29. An aircraft having a surveillance system, comprising:
2 a first cabinet configured for housing:
3 a first air traffic control transponder;
4 a first traffic alert and collision avoidance system;
5 a first terrain awareness and warning system;
6 a first weather detection and avoidance radar system;
7 a second cabinet configured for housing:
8 a second air traffic control transponder;
9 a second traffic alert and collision avoidance system;
10 a second terrain awareness and warning system;
11 a second weather detection and avoidance radar system.

1 30. The aircraft of Claim 29 wherein the first cabinet has a size and a
2 shape corresponding to a size and a shape of the second cabinet.

1 31. The aircraft of Claim 30 further comprising the first air traffic control
2 transponder in the first cabinet and the second air traffic control transponder in
3 the second cabinet.

1 32. The aircraft of Claim 31 further comprising the first traffic alert and
2 collision avoidance system in the first cabinet.

1 33. The aircraft of Claim 32 wherein the first cabinet has a length of at
2 least about 9 inches, a width of at least about 12 inches and a height of at least
3 about 6 inches.